BEFORE
THE PUBLIC SERVICE COMMISSION OF
SOUTH CAROLINA

DOCKET NO. 2023-388-E

In the Matter of:	)	
	)	**DIRECT TESTIMONY OF**
Application of Duke Energy	)	**STEVEN D. CAPPS**
Carolinas, LLC For Authority to	)	**FOR DUKE ENERGY**
Adjust and Increase its Electric Rates and Charges	)	**CAROLINAS, LLC**

I. INTRODUCTION AND OVERVIEW

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Steven D. Capps and my business address is 13225 Hagers Ferry Road, Huntersville, North Carolina.

Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT CAPACITY?

A. I am Senior Vice President of Nuclear Operations for Duke Energy Corporation ("Duke Energy") with direct executive accountability for Duke Energy's South Carolina nuclear plants, including Duke Energy Carolinas, LLC's ("DEC" or the "Company") Catawba Nuclear Station ("Catawba") in York County, South Carolina, the Oconee Nuclear Station ("Oconee") in Oconee County, South Carolina, and Duke Energy Progress ("DEP"), LLC's Robinson Nuclear Plant, located in Darlington County, South Carolina.

Q. WHAT ARE YOUR RESPONSIBILITIES AS SENIOR VICE PRESIDENT OF NUCLEAR OPERATIONS?

A. As Senior Vice President of Nuclear Operations, I am responsible for providing executive oversight for the safe and reliable operation of Duke Energy's three South Carolina operating nuclear stations. I am also involved in the operations of Duke Energy's other nuclear stations, including DEC's McGuire Nuclear Station ("McGuire") located in Mecklenburg County, North Carolina.

Q. PLEASE SUMMARIZE YOUR EDUCATIONAL BACKGROUND AND PROFESSIONAL EXPERIENCE.

A. I have more than 36 years of experience in the nuclear field. I joined Duke Energy in 1987 as a field engineer at Oconee. During my time at Oconee, I served in a variety of leadership positions at the station, including Senior Reactor Operator, Shift Technical Advisor, and Mechanical and Civil Engineering Manager. In 2008, I transitioned to McGuire as the Engineering Manager. I later became plant manager and was named Vice President of McGuire in 2012. In December 2017, I was named Senior Vice President of Nuclear Corporate for Duke Energy with direct executive accountability for Duke Energy's nuclear corporate functions, including nuclear corporate engineering, nuclear major projects, corporate governance and operation support, and organizational effectiveness. I assumed my current role in October 2018. I earned a B.S. in Mechanical Engineering from Clemson University, and I have completed the Institute of Nuclear Power Operations ("INPO") senior nuclear plant management course.

Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE OR FILED TESTIMONY WITH THIS COMMISSION?

A. Yes. I testified before the Public Service Commission of South Carolina (the "Commission") in DEC's 2018 base rate case proceeding in Docket No. 2018-319-E, and DEC's 2018, 2019, 2020, 2021, 2022, and 2023 fuel cost proceedings in Docket Nos. 2018-3-E, 2019-3-E, 2020-3-E, 2021-3-E, 2022-3-E, and 2023-3-E.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS PROCEEDING?

A. The purpose of my testimony is to provide information in support of the Company's request for a base rate adjustment. To this end, I describe DEC's nuclear generation assets; update the Commission on capital additions since the Company's last rate case filed in 2018, Docket No. 2018-319-E (the "2018 Rate Case"); explain key drivers impacting nuclear operations and maintenance ("O&M") costs; and provide operational performance results for calendar year 2022 (the "Test Period"). I also provide support for the Company's request to adjust depreciation and amortization expenses to establish a reserve for end of life nuclear costs not captured in decommissioning studies.

Q. WHAT ARE THE PRIMARY CAPITAL AND O&M DRIVERS WITHIN THE NUCLEAR FLEET DRIVING THIS REQUEST?

A. Since the 2018 Rate Case, capital investments have been made to enhance safety, comply with new regulatory requirements, enhance reliability and efficiency, and manage aging and obsolescent equipment. In addition, while the Company has effectively managed O&M challenges, it also continues to face O&M pressures.

Q. PLEASE PROVIDE AN EXECUTIVE SUMMARY OF YOUR TESTIMONY.

A. DEC's nuclear fleet is a critical component of Duke Energy's diverse resource mix and of the Company's strategy for maintaining safe, reliable, and affordable

service for customers in both South Carolina and North Carolina. The DEC fleet provides over 5,000 MWs of efficient baseload generating capacity for our customers, with five of the seven nuclear units located in South Carolina.

In order to continue to provide safe, reliable, and affordable service, DEC has invested approximately $1.38 billion on a system basis in capital improvements to the nuclear fleet since the Company's 2018 Rate Case. This figure reflects actual investments from January 1, 2019 – September 30, 2023 and estimates for October – December of 2023. Estimates will be updated to actuals in the supplemental testimony of Company witness LaWanda Jiggetts. These investments were required to enhance safety, preserve performance and reliability of the plants throughout their extended life operations, and address regulatory requirements. Across the fleet, these investments have resulted in improvements to physical security measures, implemented innovations that drive performance improvements and efficiencies, and completed projects to improve turbine reliability. Additional capital investments at each of the Catawba, McGuire, and Oconee stations will allow the stations to continue to operate safely and reliably for years to come.

Since the Company's 2018 Rate Case, the DEC nuclear fleet established a new annual generation and annual capacity factor record, and the Company will continue to enhance fleet reliability and efficiency on a cost per kilowatt hour ("kWh") basis through a variety of initiatives. DEC will also continue to face the significant challenge of the cost and technological requirements for

maintaining systems and equipment within the nuclear fleet to ensure safe, reliable, and economical power that emits zero greenhouse gases. In addition to the capital investments included in this rate case, the Company will pursue subsequent license renewal ("SLR") for each of its stations to allow for up to an additional 20 years of operation. The extension of the nuclear stations' licenses allows for the continued use of a safe, reliable, and affordable source of generation benefiting our customers and meeting these challenges going forward.

Q. HOW IS THE REMAINDER OF YOUR TESTIMONY ORGANIZED?

A. The remainder of my testimony is organized as follows:

II. NUCLEAR FLEET: Generation Capacity and Asset Descriptions

III. CAPITAL ADDITIONS: In-Service for This Proceeding

IV. O&M EXPENSES

V. ADDITIONAL NUCLEAR FLEET CONSIDERATIONS

VI. NUCLEAR OPERATIONAL PERFORMANCE: Metrics and Industry Benchmarking

VII. END OF LIFE NUCLEAR RESERVE

VIII. CONCLUSION

II. NUCLEAR FLEET

Q. PLEASE LIST DEC'S NUCLEAR FLEET.

A. The Company's nuclear generation portfolio consists of approximately 5,389[1] megawatts ("MWs") of power capacity made up as follows:

Oconee - 2,554 MWs

McGuire - 2,316 MWs

Catawba - 519 MWs[2]

Q. PLEASE GENERALLY DESCRIBE DEC'S NUCLEAR GENERATION ASSETS.

A. DEC's nuclear fleet consists of three generating stations and a total of seven units. Oconee began commercial operation in 1973 and was the first nuclear station designed, built, and operated by DEC. It has the distinction of being the second nuclear station in the country to have its license, originally issued for 40 years, renewed for up to an additional 20 years by the Nuclear Regulatory Commission ("NRC"). The license renewal, which was obtained in 2000, extends operations to 2033, 2033, and 2034 for Oconee Units 1, 2, and 3, respectively.

McGuire began commercial operation in 1981, and Catawba began commercial operation in 1985. In 2003, the NRC renewed the licenses for McGuire and Catawba for up to an additional 20 years each. This renewal

[1] As of January 1, 2023.

[2] Reflects DEC's ownership portion of Catawba Nuclear Station.

extends operations until 2041 for McGuire Unit 1, and 2043 for McGuire Unit 2 and Catawba Units 1 and 2. The Company jointly owns Catawba with North Carolina Municipal Power Agency Number One, North Carolina Electric Membership Corporation, and Piedmont Municipal Power Agency.

Q. WHAT ARE DUKE ENERGY'S PLANS RELATED TO SUBSEQUENT LICENSE RENEWAL FOR THE EXISTING NUCLEAR FLEET?

A. In 2019, Duke Energy announced intentions to seek SLR for all six nuclear plants, including DEC's Catawba, McGuire, and Oconee plants. The license application for the Oconee station was submitted to the NRC in June 2021. The remaining plant SLR submittals are scheduled to follow in the next few years. The SLR application process is detailed and thorough, and each application review is expected to take approximately eighteen months or longer.

Q. WHY IS THE COMPANY SEEKING SLR FOR ITS NUCLEAR FLEET?

A. The Company's nuclear fleet is a critical component of DEC's strategy for maintaining safe, reliable, and affordable electric service for its customers in both South Carolina and North Carolina as part of DEC's dual state system. These units have contributed to the Company's ability to provide such service for decades and are projected to be needed for decades more. Seeking SLR for the fleet is therefore in the best interest of customers continuing to benefit from affordable and reliable electric energy as well as from reduced carbon emissions. The Company's long-term maintenance of its nuclear plants, including investments made for major modifications and upgrades to each plant

and adherence to an aging management program pursuant to the stations' previous license extensions, make these stations good candidates for SLR.

Q. WERE THERE ANY POWER CAPACITY CHANGES WITHIN DEC'S NUCLEAR PORTFOLIO SINCE THE LAST RATE CASE?

A. No.

III. CAPITAL ADDITIONS

Q. PLEASE PROVIDE ADDITIONAL DETAILS REGARDING MAJOR CAPITAL PROJECTS FOR NUCLEAR BEING INCLUDED IN THIS CASE.

A. Since the 2018 Rate Case, DEC has, through December 31, 2023, invested approximately $1.38 billion in beneficial capital projects at a system level. As stated previously, this reflects actual investments through September 2023 and estimates for the last quarter of 2023 (which will be updated in a supplemental filing). These capital improvements were required to enhance safety and efficiency, preserve performance and reliability of the plants throughout their extended life operations, and address regulatory requirements.

For example, all three DEC stations made advancements in the area of innovation by the installation of equipment associated with the intelligent monitoring and remote analytics center ("IMAC") at each site. IMAC enables remote online monitoring of certain plant equipment for vibration, motor current signature analysis, turbine monitoring, and transformer monitoring. It is anticipated that remote online monitoring will reduce O&M expenses by

allowing some time-based preventative maintenance to be shifted to condition-based.

Additionally, the fleet has completed the projects to optimize the sites' physical security via the execution of the secure owner-controlled area ("SOCA"), early warning and assessment system ("EWAS"), and defensive position upgrade ("DFP") projects. These projects enhanced the security posture at each nuclear plant in the most cost-effective manner. The final SOCA and EWAS projects were completed in 2020 and the DFP effort was completed in 2021.

During 2022 and 2023 both Catawba and McGuire stations performed water jet peening treatments on the reactor vessel closure heads ("RVCHs") to mitigate the risk of primary water stress corrosion cracking and maintain the pressure boundary integrity of the RVCHs. This work was done to ensure continued reliability by alleviating an active degradation mechanism on the RVCH penetration welds.

At Catawba, capital investments to replace the low pressure turbine ("LPT") rotors and associated diaphragms were completed for Unit 1 in 2020 and Unit 2 in 2021. The LPT replacements were done to improve the reliability of the turbines and reduce inspections and maintenance. Catawba Unit 2 replaced degraded safety and non-safety core exit thermocouples and cables in 2021. This work was required to ensure continued compliance with regulatory requirements related to this equipment and is also anticipated to result in

refueling outage time savings and reduced dose to site personnel. Additionally, Catawba replaced the 1B and 2B main step-up ("MSU") transformers in 2022 and 2023 respectively. The MSUs were strategically replaced as part of the nuclear fleet's effort to address these aging components and ensure these critical pieces of equipment can support operations through the end of the SLR period.

Catawba has also executed multiple projects to improve and enhance the reliability of station equipment including control rod purchases, reactor coolant pump seal replacements, and component cooling heat exchangers retubings.

At McGuire, projects have been executed to ensure continued safe and reliable operations, including the completion of the modifications of the distributed control system ("DCS") for Unit 2 in 2020. The DCS project involved the replacement and upgrade of components supporting the nuclear steam supply system to address reliability of aging and obsolete equipment as well as cyber security requirements.

Additionally, McGuire executed multiple projects to improve and enhance the reliability of station equipment including reactor coolant pump seals and motors replacements and feedwater pump turbine replacements.

Oconee has completed multiple projects to address aging equipment and ensure continued reliability in the future. The Oconee Unit 2 LPT rotor and associated diaphragm replacements were completed during the 2019 refueling outage, and the Units 1 and 3 LPT rotor and associated diaphragm replacements

were completed during refueling outages in 2020. The LPT replacments improve the reliability of the turbines and reduce inspections and maintenance. Additionally, to improve equipment at Oconee, feedwater heaters, chillers, reactor coolant pump seals and motors, and piping components subject to primary water stress corrosion cracking have been replaced. The replacement of this equipment will allow Oconee to continue to operate reliably while also enhancing safety and regulatory margins.

Q. ARE THE CAPITAL ADDITIONS AND ENHANCEMENTS YOU HAVE DESCRIBED IN YOUR TESTIMONY USED AND USEFUL IN PROVIDING ELECTRIC SERVICE TO DEC'S ELECTRIC CUSTOMERS IN SOUTH CAROLINA?

A. Yes. These capital additions are used and useful in safely and efficiently providing reliable electric service to the Company's customers. The Company recognizes the value to customers of well-maintained and high performing nuclear plants. DEC's nuclear plants have been maintained to a standard that allowed all seven units to be relicensed for an additional 20 years via the initial license renewal process, and these efforts support the SLR process that can extend the life of the plants out through 80 years. The Company's successful efforts to maintain and, when required, replace obsolete equipment and systems, enhance safety margins in compliance with new NRC requirements, and increase output and capacity, ensure customers will continue to benefit from the power provided by this reliable, efficient, cost-effective and greenhouse gas

emissions-free, 24/7 power source of energy for many years to come. These investments have positioned the Company to maintain high levels of operational safety, efficiency, reliability, and performance that is reflected in the nuclear performance results I discuss later in my testimony.

IV. O&M EXPENSES

Q. PLEASE DESCRIBE SIGNIFICANT COST DRIVERS IMPACTING O&M EXPENSES FOR DEP'S NUCLEAR FLEET.

A. During the Test Period, approximately 35% of the required O&M expenditures for DEC's nuclear fleet were fuel related. A complete discussion of nuclear fuel costs can be found in Company witness Matthew L. Cameron's testimony filed with this Commission in DEC's annual fuel proceedings in Docket No. 2022-3-E and Docket No. 2023-3-E. In his testimony, witness Cameron noted that the Company anticipates a modest increase in nuclear fuel costs on a cents per kWh basis through the next several years. Customers will continue to benefit from the Company's diverse energy mix and the strong performance of its nuclear fleet through lower fuel costs than would otherwise result absent the significant contribution of nuclear power to meeting customers' demands.

The remainder of O&M expenditures for the nuclear fleet represent non-fuel items. Nuclear power plant operations and maintenance are very labor intensive and, therefore, a significant portion of O&M expenses are related to internal and contracted labor. External supplemental labor is critical to the safe and efficient execution of refueling outages. Much of the supplemental labor

required during refueling outages is highly trained, skilled, and specialized, and the Company competes with other nuclear companies to secure the supplemental labor required. Inflationary pressures among this labor pool have exceeded routine inflation. In addition to continuing to face upward pressure on these ongoing labor costs, other challenges have occurred with rising costs for materials and supplies. By leveraging the size of the Company's nuclear fleet and efficient execution of of refueling outages, the Company has been successful in effectively mitigating some of this inflationary pressure. However, despite these aggressive and significant efforts, DEC continues to face new costs and inflationary pressures.

Q. WHAT EXAMPLES CAN YOU PROVIDE RELATED TO THE COMPANY'S EFFORTS TO CONTROL O&M COSTS?

A. The Company has many efforts in place for controlling and/or saving costs. An area of focus in recent years has been outage optimization, focusing on duration, budget, dose, and production. This approach applies strict controls on reducing outage durations by aligning typical maintenance work within duration templates, allocating costs based on duration templates, improving alignment of bulk work to minimize schedule impacts, and targeting dose to the five-year ALARA[3] plan. Continuing efforts to reduce refueling outage durations are yielding results. In 2020, McGuire Unit 2 had its shortest refueling outage on

[3] Code of Federal Regulations (10 C.F.R. § 20.1003) acronym for "as low as (is) reasonably achievable."

record and experienced continuous operations without an outage for over 520 days between October 2018 and March 2020. In 2021, Catawba Unit 1 set a Duke Energy nuclear fleet refueling outage duration record with an 18.8-day refueling outage. Additionally, Oconee Unit 2 had its shortest refueling outage on record in 2021 and experienced continuous operations without an outage for 701 days between December 2019 and November 2021. Oconee Unit 3 also experienced a continuous run of over 727 days without an outage between May 2020 and May 2022. Catawba Unit 2 and McGuire Unit 1 also experienced extended periods of continuous operations without outages of 534 days and 528 days respectively. Shorter refueling outages and longer continuous runs result in reduced O&M expense and directly benefit customers by allowing increased output from the lower fuel cost nuclear units.

Innovation is another key area of focus to help control costs. I mentioned IMAC earlier in my testimony. The remote monitoring capability enabled by IMAC is anticipated to reduce O&M costs as more maintenance activities are initiated by equipment performance-based maintenance versus time-based preventive maintenance, thereby reducing both labor and material requirements. The Company has expanded the use of robotics and drones for inspection activities in high dose areas or areas that are difficult or impossible to access during plant operations. Expanded use of these types of technologies reduce radiation exposure and enhance personnel safety for workers. As

indicated by these examples, the Company is aggressively pursuing innovation and technology.

Q. CAN YOU COMMENT ON THE COMPANY'S EFFORTS TO MAINTAIN AND IMPROVE CYBER SECURITY?

A. Yes. DEC operates under a Cyber Security Plan approved by the NRC. The activities outlined by the Company within its Cyber Security Plan include examining current practices, developing cyber security program processes, reviewing critical digital assets, performing validation testing, and implementing new controls. The DEC nuclear plants continue to assess current cyber threats and improve defenses. The Nuclear Generation organization maintains dedicated resources to these key protective actions and works with enterprise cyber security experts, the NRC, Department of Homeland Security, and other law enforcement agencies. We also partner with nuclear organizations such as the Nuclear Energy Institute and the Institute of Nuclear Power Operations and maintain open communications with our industry peers. The combination of these actions provides a robust defense.

V. ADDITIONAL NUCLEAR FLEET CONSIDERATIONS

Q. HAS THE COMPANY ATTEMPTED TO LIMIT COST INCREASES FOR CAPITAL ADDITIONS AND O&M EXPENSES?

A. Yes. The Company controls costs for capital projects and O&M utilizing a rigorous cost management program. The Company sustainably controls costs through routine executive oversight of project budget and activity reporting,

with new projects requiring approval by progressively higher levels of management depending on total project cost. The Company also controls ongoing capital and O&M costs through strategic planning and procurement, efficient oversight of contractors by a trained and experienced workforce, rigorous monitoring of work quality, thorough critiques to drive process improvement, and industry benchmarking to ensure the utilization of best practices.

Q. HAS THE COMPANY INCURRED ADDITIONAL O&M OR CAPITAL COSTS DUE TO ANY OTHER REGULATORY OBLIGATIONS SINCE THE 2018 RATE CASE?

A. There have been no new significant regulatory obligations. In the 2018 Rate Case, the Company indicated that additional Fukushima and Environmental Protection Agency ("EPA") regulations related to water intake and cooling functions could potentially result in additional O&M and capital expense. However, there were no new Fukushima regulatory actions announced since the 2018 Rate Case. All Fukushima related actions at Catawba, McGuire, and Oconee have been completed. Therefore, those potential increases have not materialized.

All three DEC stations have submitted reports related to the EPA water intake and cooling water regulations, and no plant modifications are required.

Q. ARE THERE CURRENT ISSUES IN THE NUCLEAR INDUSTRY THAT MAY FURTHER IMPACT COSTS FOR CAPITAL AND/OR O&M?

A. Yes. For example, as a result of the Russian invasion of Ukraine, supply challenges and increased cost pressures on the procurement of uranium and uranium fuel process services are expected over the next several years. Duke Energy has always valued diversity of supply and is working with urgency to mitigate these potential impacts.

As I discussed earlier in my testimony, cyber security requires an ongoing effort to maintain defenses against ever increasing technical capabilities of adversaries. The current geopolitical unrest associated with Russian aggression in Ukraine has heightened the threat assessment for critical infrastructure including power generation. Continued diligence is required to ensure reliable operations are not impacted by malicious cyber actors. As cyber risks continue to increase, Company efforts must match these threats. Continued diligence could require deployment of additional resources.

As I noted earlier, despite the success of the Company's efficiency initiatives to mitigate cost increases, DEC continues to face upward pressure on O&M costs. The Company is also experiencing supply chain challenges resulting in longer lead times and increased costs for some materials. These challenges increased as the world began to exit the pandemic. Efforts to mitigate these challenges include relying on the size and scale of Duke Energy's

combined purchasing and contracting power. We are also mitigating challenges with labor and resources by partnering with community colleges and universities to ensure a pool of well-trained candidates are available in our service territories, and developing our existing workforce with training.

VI. NUCLEAR OPERATIONAL PERFORMANCE

Q. WHAT ARE DEC'S OBJECTIVES IN THE OPERATION OF ITS NUCLEAR GENERATION ASSETS?

A. The primary objective of DEC's nuclear generation department is to safely provide reliable and cost-effective energy to the Company's customers. The Company achieves this objective by focusing on several key areas. Operations personnel and other station employees are well-trained and execute their responsibilities to the highest standards in accordance with detailed procedures. The Company maintains station equipment and systems reliably and ensures timely implementation of work plans and projects that enhance the performance of systems, equipment, and personnel. Station refueling and maintenance outages are conducted through the execution of well-planned, well-executed, and high-quality work activities, which effectively ready the plant for operation until the next planned outage.

Q. PLEASE DISCUSS THE PERFORMANCE OF THE COMPANY'S NUCLEAR FLEET SINCE 2018.

A. Since the 2018 rate case, including during the Test Period, the DEC nuclear fleet has continued to perform well. In 2019 the DEC nuclear fleet set a record annual

net generation and capacity factor. Additionally, as I noted earlier, Catawba Unit 2 achieved the fleet's shortest ever refueling outage and Catawba Unit 1, Catawba Unit 2, and Oconee Unit 2 each had continuous runs between refueling outages.

In 2020, Oconee Unit 2 achieved a record annual net generation and set a record annual capacity factor. McGuire Unit 2 completed a continuous run of over 524 days between refueling outages and achieved its shortest ever refueling outage.

In 2021, the Oconee station and Oconee Unit 1 achieved record annual generation and capacity factors, and both Oconee Unit 3 and McGuire Unit 1 achieved new annual generation records. Catawba Unit 1 achieved a fleet record refueling outage duration of 18.8 days and Oconee Unit 2 achieved its shortest ever refueling outage. Additionally, Catawba Unit 2 achieved a record continuous run of over 534 days between refueling outages, and Oconee Unit 2 had a continuous run between refueling outages of over 701 days.

DEC's nuclear fleet continued to perform well during the Test Period, providing approximately 61% of DEC's generation needs. During 2022, DEC's nuclear plants achieved an annual capacity factor of 94.66%. Catawba Unit 1 achieved a record annual net generation and had a capacity factor of 101.14% in 2022. McGuire Unit 1, Oconee Unit 1, and Oconee Unit 3 each completed continuous runs between refueling outages during the test period. The Oconee Unit 3 continuous run set a fleet record with continuous run of 727.1 days.

These performance results support DEC's continued commitment to achieving high performance without compromising safety and reliability.

Q. WHAT INITIATIVES HAS THE COMPANY TAKEN TO INCREASE EFFICIENCIES IN NUCLEAR OPERATIONS?

A. The Company uses benchmarking, long-range planning, work prioritization tools, and other processes to continuously improve operational and cost performance. Over the years, the Company has gained efficiencies from the implementation of common policies, practices, and procedures across the Duke Energy nuclear fleet. In addition, efficiencies are sought through incorporation of industry best practices. Since the merger of DEC and DEP, a focused effort remains on improving fleet performance in various areas, and a focus on organizational effectiveness continues to identify and address work improvements. The goal is aligning operations at a fleet level, taking advantage of shared experiences and process improvement opportunities. Overall, improvement efforts result in enhanced fleet reliability and efficiency on a cost per kWh basis.

Q. HOW DOES THE COMPANY'S NUCLEAR FLEET COMPARE TO OTHERS IN THE INDUSTRY?

A. The Company's nuclear fleet has a history of top performance and continues to rank among the top performers when compared to the seven other large domestic nuclear fleets using Key Performance Indicators in the areas of personal safety, radiological dose, manual and automatic shutdowns, capacity

factor, forced loss rate, industry performance index, and total operating cost. On a larger industry basis, using data for 2022 from the Electric Utility Cost Group, the DEC nuclear stations all ranked in the top quartile in total operating cost among the 55 U.S. nuclear plants reporting. Industry benchmarking efforts are a principal technique used by the Company to ensure best practices. These efforts further ensure overall prudence, safety, and reliability of DEC's nuclear units.

VII. END OF LIFE NUCLEAR RESERVE

Q. IS THE COMPANY PROPOSING TO CREATE A RESERVE FOR END OF LIFE NUCLEAR COSTS?

A. Yes. As discussed in Company witness Jiggetts's testimony, the Company is proposing to create a reserve to start accruing for end of life nuclear fuel and materials and supplies inventory.

Q. WHY IS ESTABLISHING AN END OF LIFE NUCLEAR RESERVE IN THE BEST INTEREST OF TODAY'S CUSTOMERS?

A. South Carolina customers have received and will continue to receive the benefits from the strong safety and operational performance of the Company's nuclear fleet. The reserve fund estimate primarily consists of the remaining fuel in core and inventory used to maintain the units; these costs not covered in the decommissioning fund represent the costs of continued operations of the nuclear fleet.

Q. ARE THE ESTIMATES USED TO ESTABLISH THE END OF LIFE NUCLEAR RESERVE FUND APPROPRIATE?

A. Yes. Regarding nuclear fuel, the Company used current forecasts for uranium, fabrication, and enrichment to calculate the estimated value of underutilized fuel remaining in the last core. For nuclear inventory, the Company used the existing inventory balance at the end of the Test Period as the estimate of inventory remaining on the last day of operation. In addition, the calculations to project these costs assume SLR extension of the licenses for the Company's nuclear units.

VIII. CONCLUSION

Q. IS THERE ANYTHING YOU WOULD LIKE TO SAY IN CLOSING?

A. Yes. The Company has a proven history of cost competitive operation of its nuclear assets concurrent with maintaining safety, quality, and reliability. DEC is positioned to continue as a leader in the industry with a solid base of knowledge and experience, and with a nuclear fleet that is highly efficient, reliable, and an essential part of Duke Energy's diverse resource mix. This base rate increase will allow the Company to continue its tradition of operational excellence and focus on safe operations, reliable generation, and strong performance of its nuclear fleet that ultimately benefits our customers.

Q. DOES THIS CONCLUDE YOUR PRE-FILED DIRECT TESTIMONY?

A. Yes.